

# Personal Protective Equipment

U.S. Department of Labor  
Occupational Safety and Health Administration

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1998 (Revised)

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This informational booklet is intended to provide a generic, non-exhaustive overview of a particular standards-related topic. This publication does not itself alter or determine compliance responsibilities, which are set forth in OSHA standards themselves and the ***Occupational Safety and Health Act***. Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.

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# Personal Protective Equipment



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## Introduction

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The goal of the ***Occupational Safety and Health Act of 1970*** is to ensure safe and healthful working conditions for working men and women in the nation. This Act, which established the Occupational Safety and Health Administration (OSHA) in the Department of Labor, provides for research, information, education, and training in the field of occupational safety and health and authorizes enforcement of OSHA standards.

The Act covers more than 100 million employees throughout the United States. This landmark legislation, the first national safety and health law, establishes standards requiring employers to provide their workers with workplaces free from recognized hazards that could cause serious injury or death. It also requires the employees to abide by all safety and health standards that apply to their jobs.

Although the aim of this booklet is to assist in providing a safe and healthful workplace, the scope is restricted to preventing employee exposure to unsafe equipment and situations. Words such as "must," "shall," "required," and "necessary" indicate requirements under the OSHA standards. Procedures indicated by "should," "may," "suggested," and "recommended" constitute generally accepted good practices.

Much of the personal protective equipment (PPE) information in this booklet is framed in general terms and is intended to complement relevant regulations and manufacturers' requirements. For more specific information, refer to the OSHA standards collected in ***Title 29, Code of Federal Regulations*** (CFR), Parts 1900-1999. In some instances, the standards or this booklet refer to specifications by the American National Standards Institute (ANSI), 11 West 42nd St., New York, NY 10036, and the American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103. Employers are encouraged to use the most recent ANSI consensus standards and resolutions to provide protection equal to or greater than Federal OSHA regulations.

Information in this booklet also reflects OSHA's latest revisions to PPE standards (1910.132 and 1910.138) as published in the ***Federal Register*** Vol. 59, No. 66, pp. 16344-16364, April 6, 1994, and Vol. 59, No. 126, pp. 33910, July 1, 1994. The final rule also contains nonmandatory guidelines for a hazard assessment and a chart identifying the appropriate personal protective equipment for particular hazards.

Personal protective equipment should not be used as a substitute for engineering, work practice, and/or administrative controls. Personal protective equipment should be used in conjunction with these controls to provide for employee safety and health in the work place. Personal protective equipment includes all clothing and other work accessories designed to create a barrier against workplace hazards. The basic element of any management program for personal protective equipment should be an in depth evaluation of the equipment needed to protect against the hazards at the workplace. Management dedicated to the safety and health of the employees should use that evaluation to set a standard operating procedure for personnel, then train employees on the protective limitations of personal protective equipment, and on its proper use and maintenance.

Using personal protective equipment requires hazard awareness and training on the part of the user. Employees must be aware that the equipment does not eliminate the hazard. If the equipment fails, exposure will occur. To reduce the possibility of failure, equipment must be properly fitted and maintained in a clean and serviceable condition.

Selection of the proper personal protective equipment for a job is important. Employers and employees must understand the equipment's purpose and its limitations. The equipment must not be altered or removed even though an employee may find it uncomfortable. (Sometimes equipment may be uncomfortable simply because it does not fit properly.)

This booklet discusses those types of equipment most commonly used for protection for the head, including eyes and face and the torso, arms, hands, and feet. The use of equipment to protect against life-threatening hazards also is discussed. Information on respiratory protective equipment may be found in Title, 29 CFR, Part 1910.134. The standard should be consulted for information on specialized equipment such as that used by firefighters.

Employers and employees in the 25 states that operate OSHA-approved workplace safety and health plans should check with their state. Their state may be enforcing standards and other procedures that while "at least as effective as" federal standards are not always identical to the federal requirements. See page 24 for more information on state plans.

## Hazard Assessment

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Employers are required to assess the workplace to determine if hazards that require the use of personal protective equipment are present or are likely to be present. If hazards or the likelihood of hazards are found employers must select and have affected employees use properly fitted personal protective equipment suitable for protection from these hazards.

Employers must certify in writing that a workplace hazard assessment has been performed. Defective or damaged personal protective equipment shall not be used.

## Training

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Before doing work requiring use of personal protective equipment, employees must be trained to know: when personal protective equipment is necessary; what type is necessary; how it is to be worn; and what its limitations are, as well as know its proper care, maintenance, useful life, and disposal. In many cases, more than one type of personal protective equipment will provide adequate protection. In those instances, employers should be given a choice.

Employers must certify in writing that training has been carried out and that employees understand it. Each written certification shall contain the name of each employee trained, the date(s) of training, and identify the subject certified.

## Head Protection

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Prevention of head injuries is an important factor in every safety program. A survey by the Bureau of Labor Statistics (BLS) of accidents and injuries noted that most workers who suffered impact injuries to the head were not wearing head protection [1.p.2]. The majority of workers were injured while performing their normal jobs at their regular worksites.

The survey showed that in most instances where head injuries occurred employers had not required their employees to wear head protection. Of those workers wearing hard hats, all but 5 percent indicated that they were required by their employers to wear them [1,p.2]. The vast majority of those who wore hard hats all or most of the time at work believed that hard hats were practical for their jobs. According to the report, in almost half of the accidents involving head injuries, employees knew of no actions taken by employers to prevent such injuries from recurring.

The BLS survey noted that more than one-half of the workers were struck in the head while they were looking down and almost three-tenths were looking straight ahead. Although a third of the unprotected workers were injured when bumping into stationary objects, such actions injured only one-eighth of hard hat wearers [1.p.1]. Elimination or control of a hazard leading to an accident causing head injuries are of a type difficult to anticipate and control. Where these conditions exist, head protection must be provided to prevent injury.

Head injuries are caused by falling or flying objects, or by bumping the head against a fixed object. Head protection, in the form of protective hats, must do two things -- resist penetration and absorb the shock of the blow. This is accomplished by making the shell of the hat of a material hard enough to resist the blow, and by utilizing a shock-absorbing lining composed of headband and crown straps to keep the shell away from the wearer's skull. Protective hats are

also used to protect against electric shock.

The standards recognized by OSHA for protective hats purchased prior to July 5, 1994, are contained in ANSI **Requirements for Industrial Head Protection**, Z89.1-1969, and ANSI **Requirements for Industrial Protective Helmets for Electrical Workers**, Z89.2-1971. These should be consulted for details. The standards for protective helmets purchased after July 5, 1994, are contained in ANSI **Personnel Protection -- Protective Headwear for Industrial Workers-Requirements**, Z89.1-1986. Later editions of these standards are available and acceptable for use.

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## Selection

Each type and class of head protector is intended to provide protection against specific hazardous conditions. An understanding of these conditions will help in selecting the right hat for the particular situation.

Protective hats are made in the following types and classes:

**Type 1** - helmets with full brim, not less than 1 and 1/4 inches wide; and **Type 2** - brimless helmets with a peak extending forward from the crown.

For industrial purposes, three classes of helmets are recognized:

**Class A** - general service, limited voltage protection;

**Class B** - utility service, high-voltage helmets; and

**Class C** - special service, no voltage protection.

For firefighters, head protection must consist of a protective head device with ear flaps and a chin strap that meet the performance, construction, and testing requirements stated in Title 29 CFR, 1910.156(e)(5).

Hats and caps under **Class A** are intended for protection against impact hazards. They are used in mining, construction, shipbuilding, tunneling, lumbering, and manufacturing.

**Class B**, utility service hats and caps protect the wearer's head from impact and penetration by falling or flying objects and from high-voltage shock and burns. They are used extensively by electrical workers.

The safety hat or cap in **Class C** is designed specifically for lightweight comfort and impact protection. This class is usually manufactured from aluminum and offers no dielectric protection. **Class C** helmets are used in certain construction and manufacturing occupations, oil fields, refineries, and chemical plants where there is no danger from electrical hazards or corrosion. They also are used on occasions where there is a possibility of bumping the head against a fixed object.

Materials used in helmets should be water-resistant and slow burning. Each helmet consists essentially of a shell and suspension. Ventilation is provided by a space between the headband

and the shell. Each helmet should be accompanied by the instructions explaining the proper method of adjusting and replacing the suspension and headband.

The wearer should be able to identify the type of helmet by looking inside the shell for the manufacturer, ANSI designation and class.

Helmets are date stamped by the manufacturer and should be replaced no later than the date recommended by the manufacturer, e.g., 5 years. For example: Manufacturer's Name; ANSI Z89.1-1969 (or later year); Class A.

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#### Fit

Headbands are adjustable in 1/8-size increments. When the headband is adjusted to the right size, it provides sufficient clearance between the shell and the headband. The removable or replaceable type sweatband should cover at least the forehead portion of the headband. The shell should be of one-piece seamless construction and designed to resist the impact of a blow from falling material. The internal cradle of the headband and sweatband forms the suspension. Any part of that comes into contact with the wearer's head must not be irritating to normal skin.

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#### Inspection and Maintenance

Manufacturers should be consulted with regard to paint or cleaning materials for their helmets because some paints and thinners may damage the shell and reduce protection by physically weakening it or negating electrical resistance.

A common method of cleaning shells is dipping them in hot water (approximately 140° F) containing a good detergent for at least a minute. Shells should then be scrubbed and rinsed in clear hot water. After rinsing, the shell should be carefully inspected for any signs of damage.

All components, shells, suspensions, headbands, sweatbands, and any accessories should be visually inspected daily for signs of dents, cracks, penetration, or any other damage that might reduce the degree of safety originally provided.

Users are cautioned that if unusual conditions occur (such as higher or lower extreme temperatures than described in the standards), or if there are signs of abuse or mutilation of the helmet or any component, the margin of safety may be reduced. If damage is suspected, helmets should be replaced or representative samples tested in accordance with procedures contained in ANSI Z89.1-1986. This booklet references national consensus standards, for example, ANSI standards, that were adopted into OSHA Regulations. Employers are encouraged to use up-to-date national consensus standards that provide employee protection equal to or greater than that provided by OSHA standards.

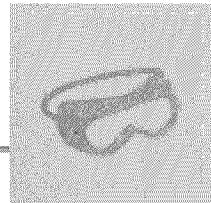
Helmets should not be stored or carried on the rear-window shelf of an automobile, since sunlight and extreme heat may adversely affect the degree of protection.

Eye and face protective equipment is required by OSHA where there is a reasonable probability of preventing injury when such equipment is used. Employers must provide a type of protector

suitable for work to be performed and employees must use the protectors. These stipulations also apply to supervisors and management personnel, and should apply to visitors while they are in hazardous areas.

## Eye and Face Protection

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The BLS study found that about 60 percent of workers who suffered eye injuries were not wearing eye protective equipment [2, p.12]. When asked why they were not wearing face protection at the time of the accident, workers indicated that face protection was not normally used or practiced in their type of work, or it was not required for the type of work performed at the time of the accident [2, p.2; 3, p.12].

Suitable eye protectors must be provided where there is a potential for injury to the eyes or face from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially injurious light radiation or a combination of these. Protectors must meet the following minimum requirements:

- Provide adequate protection against the particular hazards for which they are designed;
- Be reasonably comfortable when worn under the designated conditions;
- Fit snugly without interfering with the movements or vision of the wearer;
- Be durable;
- Be capable of being disinfected;
- Be easily cleanable; and
- Be kept clean and in good repair.

Every protector shall be distinctly marked to facilitate identification of the manufacturer.

Each affected employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. The following table lists the appropriate shade numbers for various work operations.

### Filter Lenses for Protection Against Radiant Energy

Operation	Electrode Size (1/32 inch diameter standard)	Arc Current (Amps)	Minimum* Protective Shade
Shielded metal arc welding	< 2/32	< 60	7
	3/32-5/32	60-160	8
	5/32-8/32	160-250	10
	> 8/32	250-500	11
Gas metal arc welding and flux cored arc welding		< 60	7
		60-160	10
		160-250	10
		250-500	10
Gas Tungsten arc welding		< 50	8
		50-150	8
		150-500	10
Air carbon arc cutting	(Light)	< 500	10
	(Heavy)	500-1000	10
Plasma arc welding		< 20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting	(Light)**	< 300	8
	(Medium)**	300-400	9
	(Heavy)**	400-800	10
Torch brazing		—	3
Torch soldering		—	2
Carbon arc welding		—	14

\* At a rate of burn, start with a shade that is too dark to see the weld zone (the darkest lens carries a value of 16). Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the spectrum operation.

\*\* These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

Operation	Plate Thickness		Minimum Protective Shade
	inches	millimeters	
Gas welding:	< 1/8	< 3.2	4
	1/8 to 1/2	3.2 to 12.5	5
	> 1/2	> 12.7	6
Oxygen cutting			
	< 1	< 25	3
	1 to 62	25 to 150	4
Heavy	> 6	> 150	5

OSHA and the National Society to Prevent Blindness recommend that emergency eyewashes be placed in all hazardous locations. First-aid instructions should be posted close to potential danger spots since any delay to immediate aid or an early mistake in dealing with an injury can result in lasting damage.

### Selection

Each eye, face, or face-and-eye protector is designed for a particular hazard. In selecting the protector, consideration should be given to the kind and degree of hazard, and the protector should be selected on that basis. Where a choice of protectors is given, and the degree of protection required is not an important issue, worker comfort may be a deciding factor. The BLS survey showed that few workers ever complained about poor vision or discomfort with personal eye protection equipment.

The survey noted that the typical injury was caused by flying or falling blunt metal objects. Lacerations, fractures, broken teeth, and contusions were common types of injuries reported.

Persons using corrective spectacles and those who are required by OSHA to wear eye protection must wear face shields, goggles, or spectacles of one of the following types:

- Spectacles with protective lenses providing optical correction;
- Goggles worn over corrective spectacles without disturbing the adjustment of the spectacles; or
- Goggles that incorporate corrective lenses mounted behind the protective lenses.

When limitations or precautions are indicated by the manufacturer, they should be transmitted to the user and strictly observed.

Over the years, many types and styles of eye and face-and-eye protective equipment have been developed to meet the demands for protection against a variety of hazards.

Goggles come in a number of different styles: eyecups, flexible or cushioned goggles, plastic eyeshield goggles, and foundrymen's goggles. Goggles are manufactured in several styles for specific uses such as protecting against dusts and splashes, and in chipper's, welder's, and cutter's models.

Safety spectacles require special frames. Combinations of normal streetwear frames with safety lenses are not in compliance.

Many hard hats and nonrigid helmets are designed with face and eye protective equipment.

Design, construction, tests, and use of eye and face protection purchased prior to July 5, 1994, must be in accordance with ANSI Z87.1-1968 ***USA Standard Practice for Occupational and Educational Eye and Face Protection***. Protective eye and face devices purchased after July 5, 1994, must comply with ANSI Z87.1-1989, ***American National Standard Practice for Occupational and Educational Eye and Face Protection***.

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Fitting of goggles and safety spectacles should be done by someone skilled in the procedure. Prescription safety spectacles should be fitted only by qualified optical personnel.

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## Inspection and Maintenance

It is essential that the lenses of eye protectors be kept clean. Continuous vision through dirty lenses can cause eye strain -- often an excuse for not wearing the eye protectors. Daily inspection and cleaning of the eye protector with soap and hot water, or with a cleaning solution and tissue, is recommended.

Pitted lenses, like dirty lenses, can be a source of reduced vision. They should be replaced. Deeply scratched or excessively pitted lenses are apt to break more readily.

Slack, worn-out, sweat-soaked, or twisted headbands do not hold the eye protector in proper position. Visual inspection can determine when the headband elasticity is reduced to a point beyond proper function.

Goggles should be kept in a case when not in use. Spectacles, in particular, should be given the same care as ones own glasses, since the frame, nose pads, and temples can be damaged by rough usage.

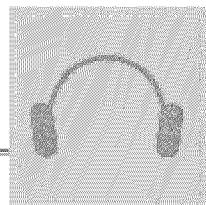
Personal protective equipment that has been previously used should be disinfected before being issued to another employee.

Also, when each employee is assigned protective equipment for extended periods, it is recommended that such equipment be cleaned and disinfected regularly.

Several methods for disinfecting eye-protective equipment are acceptable. The most effective method is to disassemble the goggles or spectacles and thoroughly clean all parts with soap and warm water. Carefully rinse all traces of soap, and replace defective parts with new ones. Swab thoroughly or completely and immerse all parts for 10 minutes in a solution of germicidal deodorant fungicide. Remove parts from solution and suspend in a clean place for air drying at room temperature or with heated air. Do not rinse after removing parts from the solution because this will remove the germicidal residue which retains its effectiveness after drying.

The dry parts or items should be placed in a clean, dust-proof container, such as a box, bag, or plastic envelope, to protect them until reissue.

## Ear Protection



Exposure to high noise levels can cause hearing loss or impairment. It can create physical and psychological stress. There is no cure for noise-induced hearing loss, so the prevention of excessive noise exposure is the only way to avoid hearing damage. Specifically designed protection is required, depending on the type of noise encountered and the auditory condition of the employee.

Preformed or molded earplugs should be individually fitted by a professional. Waxed cotton,

foam, or fiberglass wool earplugs are self-forming. When properly inserted, they work as well as most molded earplugs.

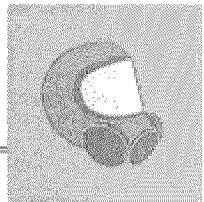
Some earplugs are disposable, to be used one time and then thrown away. The non-disposable type should be cleaned after each use for proper protection. Plain cotton is ineffective as protection against hazardous noise.

Earmuffs need to make a perfect seal around the ear to be effective. Glasses, long sideburns, long hair, and facial movements, such as chewing, can reduce protection. Special equipment is available for use with glasses or beards.

For more specific information on a hearing conservation program, see Title 29 CFR 1910.95 - ***Occupational Noise Exposure***.

## Respiratory Protection

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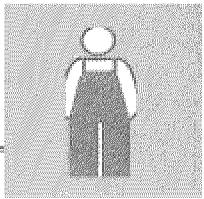


Respirators shall be used in the following circumstances:

- i. Where exposure levels exceed the permissible exposure limit (PEL), during the time period necessary to install or implement feasible engineering and work practice controls;
- ii. In those maintenance and repair activities and during those brief or intermittent operations where exposures exceed the PEL and engineering and work practice controls are not feasible or are not required;
- iii. In regulated areas;
- iv. Where the employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL;
- v. In emergencies.

## Torso Protection

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Many hazards can threaten the torso: heat, splashes from hot metals and liquids, impacts, cuts, acids, and radiation. A variety of protective clothing is available: vests, jackets, aprons, coveralls, and full body suits.

Wool and specially treated cotton are two natural fibers that are fire-resistant and comfortable since they adapt well to changing workplace temperatures.

Duck, a closely woven cotton fabric, is good for light-duty protective clothing. It can protect against cuts and bruises on jobs where employees handle heavy, sharp, or rough material.

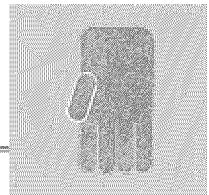
Heat-resistant material, such as leather, is often used in protective clothing to guard against dry heat and flame. Rubber and rubberized fabrics, neoprene, and plastics give protection against some acids and chemicals.

It is important to refer to the manufacturers' selection guides for the effectiveness of specific materials against specific chemicals.

Disposable suits of plasticlike or other similar synthetic materials are particularly important for protection from dusty materials or materials that can splash. If the substance is extremely toxic, a completely enclosed chemical suit may be necessary. The clothing should be inspected to ensure proper fit and function for continued protection.

## Arm and Hand Protection

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Examples of injuries to arms and hands are burns, cuts, electrical shock, amputation, and absorption of chemicals.

There is a wide assortment of gloves, hand pads, sleeves, and wristlets for protection against various hazardous situations.

Employers need to determine what hand protection their employees need. The work activities of the employees should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure to hazards and the physical stresses that will be applied.

Also, it is important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., exposure to chemicals, heat, or flames. Gloves' performance characteristics should be assessed by using standard test procedures.

Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. For example, for protection against chemical hazards, the toxic properties of the chemical(s) must be determined -- particularly, the ability of the chemical(s) to pass through the skin and cause systemic effects.

The protective device should be selected to fit the job. For example, some gloves are designed to protect against specific chemical hazards. Employees may need to use gloves -- such as wire mesh, leather, and canvas -- that have been tested and provide insulation from burns and cuts. The employee should become acquainted with the limitations of the clothing used.

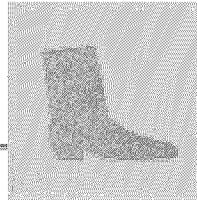
Certain occupations require special protection. For example, electricians need special protection from shocks and burns. Rubber is considered the best material for insulating gloves and sleeves from these hazards.

Rubber protective equipment for electrical workers must conform to the requirements established in ANSI as specified in the following list:

Item	Standard <sup>1</sup>
Rubber insulating gloves	ASTM D 120-87
Rubber matting for use around electrical apparatus	ASTDM D 178-88 or 178-93
Rubber insulating blankets	ASTM D 1048-93 or 1048-88A
Rubber insulating hoods	ASTM D 1048-88 or 1049-93
Rubber insulating line hose	ASTM D 1050-90
Rubber insulating sleeves	ASTM D 1051-87

Source: 29 CFR 1910.137, *Federal Register* 59 (20): 4436, January 31, 1994.

## Foot and Leg Protection



According to the BLS survey, most of the workers in selected occupations who suffered foot injuries were not wearing protective footwear. Furthermore, most of their employers did not require them to wear safety shoes. The typical foot injury was caused by objects falling fewer than 4 feet and the median weight was about 65 pounds [4, p.1]. Again, most workers were injured while performing their normal job activities at their worksites.

For protection of feet and legs from falling or rolling objects, sharp objects, molten metal, hot surfaces, and wet slippery surfaces, workers should use appropriate footguards, safety shoes, or boots and leggings. Leggings protect the lower leg and feet from molten metal or welding sparks. Safety snaps permit their rapid removal.

Aluminum alloy, fiberglass, or galvanized steel footguards can be worn over usual work shoes, although they may present the possibility of catching on something and causing workers to trip. Heat-resistant soled shoes protect against hot surfaces like those found in the roofing, paving, and hot metal industries.

Safety shoes should be sturdy and have an impact-resistant toe. In some shoes, metal insoles protect against puncture wounds. Additional protection, such as metatarsal guards, may be found in some types of footwear. Safety shoes come in a variety of styles and materials, such as leather and rubber boots and oxfords.

Safety footwear is classified according to its ability to meet minimum requirements for both compression and impact tests. These requirements and testing procedures may be found in American National Standards Institute standards. Protective footwear purchased prior to July 5, 1994, must comply with ANSI Z41.1-1967, ***USA Standard for Men's Safety-Toe Footwear***. Protective footwear purchased after July 5, 1994, must comply with ANSI Z41-1991, ***American National Standard for Personal Protection-Protective Footwear***.

## OSHA Related Issues

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### Protective Vests

A Coast Guard-approved life jacket or buoyant work vest should be used if there is danger of falling into water while working. For emergency rescue operations, boats and ring buoys with at least 90 feet (27 meters) of line must be provided.

Night workers and flagmen who might be struck by moving vehicles need suits or vests designed to reflect light.

### Cost Assumption

OSHA interprets its general personal protective equipment standard, as well as specific standards, to require employers to provide and to pay for personal protective equipment required by the company for the worker to do his or her job safely and in compliance with OSHA standards. Where equipment is personal in nature and usable by workers off the job, the matter of payment may be left to labor-management negotiations.

OSHA'S 29 CFR 1910.132 establishes the employer's general obligation to provide personal protective equipment to employees as follows:

"Protective equipment, including personal protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact."

Sections 1910.133-1910.138 contain additional requirements for specific types of personal protective equipment. To accommodate work situations in which it is customary, as an exception, for workers in a particular trade to provide their own personal protective equipment.

OSHA acknowledges that employees may provide their own equipment, but does not specify that practice as the norm. Instead, the agency underscores the employer's obligation to assure that such equipment is adequate and that it is properly maintained.

## Conclusion

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To have an effective safety program, one manager must be responsible for its coordination. First-line supervisors must be convinced of the hazard and must be held accountable for their employees' use of personal protective equipment. A safety program for new employees is a necessary part of any orientation program. An on-going safety program should be used to motivate employees to continue to use protective gear.

Teaming the correct personal protective equipment with a good training program can give the worker a large measure of safety where other controls are inadequate or impossible.

Personal protective equipment can be effective only if the equipment is selected based on its intended use, employees are trained in its use, and the equipment is properly tested and maintained, and worn.

In the final analysis, the best protection comes from an interested management and work force committed to sound work practices.

## Other Sources of OSHA Assistance

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### Safety and Health Program Management Guidelines

Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. To assist employers and employees in developing effective safety and health programs, OSHA published recommended ***Safety and Health Program Management Guidelines (Federal Register*** 54(18):3908-3916, January 26, 1988). These voluntary guidelines apply to all places of employment covered by OSHA.

The guidelines identify four general elements that are critical to the development of a successful safety and health management program:

- Management commitment and employee involvement;

- Worksite analysis;
- Hazard prevention and control; and
- Safety and health training.

The guidelines recommend specific actions under each of these general elements to achieve an effective safety and health program. A single free copy of the guidelines can be obtained from the U.S. Department of Labor OSHA/OICA Publications, P.O. box 37535, Washington, DC 20013-7535, by sending a self-addressed mailing label with your request.

## State Programs

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The ***Occupational Safety and Health Act of 1970*** encourages states to develop and operate their own job safety and health plans. States with plans approved under section 18(b) of the OSH Act must adopt standards and enforce requirements that are at least as effective as federal requirements. There are currently 25 state plan states: 23 of these states administer plans covering both private and public (state and local government) employees; the other states, Connecticut and New York, cover public sector employees only. OSHA-approved plan states must adopt safety and health standards comparable, but not necessarily identical to, the federal ones within 6 months of a federal standard's promulgation. Until a state standard is promulgated, OSHA provides interim enforcement assistance, as appropriate, in those states. A listing of approved state plans appears at the end of this publication.

## Consultation Services

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Consultation assistance is available on request to employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer. Primarily developed for smaller employers with more hazardous operations, the consultation service is delivered by state government agencies or universities employing professional safety consultants and health consultants. Comprehensive assistance includes an appraisal of all mechanical, physical work practice, and environmental hazards of the workplace and all aspects of the employer's present job safety and health program.

The program is separate from OSHA'S inspection efforts. No penalties are proposed or citations issued for any safety or health problems identified by the consultant. The service is confidential.

For more information concerning consultation assistance, see the list of consultation projects at the end of this publication.

## Voluntary Protection Programs

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Voluntary Protection Programs (VPPs) and onsite consultation services, when coupled with an effective enforcement program, expand worker protection to help meet the goals of the OSH Act. The three VPPs -- Star, Merit, and Demonstration -- are designed to recognize outstanding achievement by companies that have successfully incorporated comprehensive safety and health programs into their total management system. They motivate others to achieve excellent safety and health results in the same outstanding way, and they establish a cooperative relationship among employers, employees, and OSHA.

For additional information on VPPs and how to apply, contact the OSHA Area or Regional Offices listed at the end of this publication.

## Training and Education

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OSHA's area offices offer a variety of informational services, such as publications, audiovisual aids, technical advice, and speakers for special engagements. OSHA's Training Institute in Des Plaines, IL, provides basic and advanced courses in safety and health for federal and state compliance officers, state consultants, federal agency personnel, and private sector employers, employees, and their representatives.

The OSHA Training Institute also has established OSHA Training Education Centers to address the increased demand for its courses from the private sector and from other Federal agencies. These centers are nonprofit colleges, universities, and other organizations that have been selected after a competition for participation in the program.

OSHA also provides funds to nonprofit organizations, through grants, to conduct workplace training and education in subjects where OSHA believes there is a lack of workplace training. Grants are awarded annually. Grant recipients are expected to contribute a matching share of at least 20 per cent of the total grant cost.

For more information on grants, training, and education, contact the OSHA Training Institute, Office of Training and Education, 1555 Times Drive, Des Plaines, IL 60018, (847) 297-4810, Fax (847) 297-4874. For further information on any OSHA program, contact your nearest OSHA area or regional office listed at the end of this publication.

## Electronic Information

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Internet -- OSHA standards, interpretations, directives, and additional information are now on the World Wide Web at <http://www.osha.gov/>.

CD-ROM -- A wide variety of OSHA materials including standards, interpretations, directives, and more can be purchased on CD-ROM from the U.S. Government Printing Office. To order write to the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 or phone (202) 512-1800. Specify OSHA regulations, Documents and Technical Information on CD-ROM, (ORDT), GPO Order No. S/N 729-013-00000-5. The price is \$38 per year (\$47.50 foreign); \$15 per single copy (\$18.75 foreign).

## Emergencies

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For life-threatening situations call (800) 321-OSHA. Complaints will go immediately to the nearest OSHA area or state office for help.

## References

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1. U.S. Department of Labor. Bureau of Labor Statistics. ***Accidents Involving Head Injuries***. Report 605. Washington, DC: U.S. Government Printing Office, July 1980. 17 Pp.
2. ***Accidents Involving Eye Injuries***. Report 597. Washington, DC: U.S. Government Printing Office. April 1980. 23 Pp.
3. ***Accidents Involving Face Injuries***. Report 604. Washington, DC: U.S. Government Printing Office. May 1980. 20 Pp.
4. ***Accidents Involving Foot Injuries***. Report 626. Washington, DC: U.S. Government Printing Office. January 1981. 22 Pp.

## Related OSHA Publications

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Single free copies of the following publications can be obtained from OSHA field offices or the U.S. Department of Labor, OSHA/OICA Publications, P.O. Box 37535, Washington, DC 20013-7535. Send a self-addressed mailing label with your request.

***All About OSHA*** - OSHA 2056

***Employee Workplace Rights*** - OSHA 3021

***Consultation Services for the Employer*** - OSHA 3047

***Hearing Conservation*** - OSHA 3074

***How to Prepare for Workplace Emergencies*** - OSHA 2019

## ***Respiratory Protection - OSHA 3079***

The following publications are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (202) 512-1800, Fax (202) 512-2250. Include GPO Order No. and make checks payable to Superintendent of Documents. Credit purchases (Visa and Mastercard) are acceptable.

### ***Controlling Electrical Hazards - OSHA 3075.***

Order No. 029-016-00126-3; \$1.00.

### ***Hand and Power Tools - OSHA 3080.*** Order No.

029-016-00143-3; cost \$1.00.

### ***Job Hazard Analysis - OSHA 3071.*** Order No.

029-016-00142-5; cost \$1.00.

## **States with Approved Plans**

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### **Commissioner**

Alaska Department of Labor  
1111 West 8th Street  
Room 306  
Juneau, AK 99801  
(907) 465-2700

### **Director**

Industrial Commission of Arizona  
800 W. Washington  
Phoenix, AZ 85007  
(602) 542-5795

### **Director**

California Department of Industrial Relations  
45 Fremont Street  
San Francisco, CA 94105  
(415) 972-8835

### **Commissioner**

Connecticut Department of Labor  
200 Folly Brook Boulevard  
Wethersfield, CT 06109  
(860) 566-5123

**Director**

Hawaii Department of Labor and Industrial Relations  
830 Punchbowl Street  
Honolulu, HI 96813  
(808) 586-8844

**Commissioner**

Indiana Department of Labor  
State Office Building  
402 West Washington Street  
Room W195  
Indianapolis, IN 46204  
(317) 232-2378

**Commissioner**

Iowa Division of Labor Services  
1000 E. Grand Avenue  
Des Moines, IA 50319  
(515) 281-3447

**Secretary**

Kentucky Labor Cabinet  
1049 U.S. Highway, 127 South Suite 2  
Frankfort, KY 40601  
(502) 564-3070

**Commissioner**

Maryland Division of Labor and Industry  
Department of Licensing and Regulation  
501 St. Paul Place,  
2nd Floor  
Baltimore, MD 21202-2272  
(410) 333-4179

**Director**

Michigan Department of Consumer and Industry Services  
4th Floor Law Building  
P.O. Box 30004  
Lansing, MI 48909  
(517) 373-7230

**Commissioner**

Minnesota Department of Labor and Industry  
443 Laffayette Road  
St. Paul, MN 55155  
(612) 296-2342

**Administrator**

Nevada Division of Industrial Relations  
400 West King Street  
Carson City, NV 89710

(702) 687-3032

**Secretary**

New Mexico Environment Department  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502  
(505) 827-2850

**Commissioner**

New York Department of Labor  
W. Averill Harriman State Office Building 12  
Room 500  
Albany, NY 12240  
(518) 457-2741

**Commissioner**

North Carolina Department of Labor  
319 Chapanoke Road  
Raleigh, NC 27603  
(919) 662-4585

**Administrator**

Department of Consumer and Business Services  
Occupational Safety and Health Division (OR-OSHA)  
Labor and Industries Building  
Room 430  
Salem, OR 97310  
(503) 378-3272

**Secretary**

Puerto Rico Department of Labor and Human Resources  
Prudencio Rivera Martinez Building  
505 Munoz Rivera Avenue  
Hato Rey, PR 00918  
(809) 754-2119

**Director**

South Carolina Department of Labor Licensing and Regulation  
3600 Forest Drive  
P.O. Box 11329  
Columbia, SC 29211-1329  
(803) 734-9594

**Commissioner**

Tennessee Department of Labor  
Attention: Robert Taylor  
710 James Robertson Parkway  
Nashville, TN 37243-0659  
(615) 741-2582

**Commissioner**

Industrial Commission of Utah  
160 East 300 South, 3rd Floor,  
P.O. Box 146600  
Salt Lake City, UT 84114-6600  
(801) 530-6898

**Commissioner**

Vermont Department of Labor and Industry  
National Life Bldg. Drawer 20  
120 State Street  
Montpelier, VT 05620  
(802) 828-2288

**Commissioner**

Virgin Islands Department of Labor  
2131 Hospital Street, Box 890  
Christiansted  
St. Croix, VI 00840-4666  
(809) 773-1994

**Commissioner**

Virginia Department of Labor and Industry  
Powers-Taylor Building  
13 South 13th Street  
Richmond, VA 23219  
(804) 786-2377

**Director**

Washington Department of Labor and Industries  
General Administration Building  
P.O. Box 44001  
Olympia, WA 98504-4001  
(369) 942-4200

**Administrator**

Workers' Safety and Compensation Division  
Wyoming Department of Employment  
Herschler Building, 2nd Floor East  
122 West 25th Street  
Cheyenne, WY 82002  
(307) 777-7672

## OSHA Consultation Directory

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<b>State</b>	<b>Telephone</b>
Alabama	(205) 348-7136
Alaska	(907) 264-4957
Arizona	(602) 542-5795
Arkansas	(501) 682-4522
California	(415) 972-8515
Colorado	(970) 491-6151
Connecticut	(860) 566-4550
Delaware	(302) 761-8219
District of Columbia	(202) 576-6339
Florida	(904) 488-3044
Georgia	(404) 894-2646
Guam	011 (671) 475-0136
Hawaii	(808) 586-9100
Idaho	(208) 385-3283
Illinois	(312) 814-2337
Indiana	(317) 232-2688
Iowa	(515) 281-5352
Kansas	(913) 296-7476
Kentucky	(502) 564-6895
Louisiana	(504) 342-9601
Maine	(207) 624-6460
Maryland	(410) 333-4210
Massachusetts	(617) 727-3982
Michigan	(517) 332-8250(H) (517) 322-1809(S)
Minnesota	(612) 297-2393
Mississippi	(601) 987-3981
Missouri	(314) 751-3403
Montana	(406) 444-6418
Nebraska	(402) 471-4717
Nevada	(702) 486-5016
New Hampshire	(603) 271-2024
New Jersey	(609) 292-2424
New Mexico	(505) 827-4230
New York	(518) 457-2481
North Carolina	(919) 662-4644

North Dakota	(701) 221-5188
Ohio	(614) 644-2246
Oklahoma	(405) 528-1500
Oregon	(503) 378-3272
Pennsylvania	(412) 357-2561
Puerto Rico	(809) 754-2188
Rhode Island	(401) 277-2438
South Carolina	(803) 734-9614
South Dakota	(605) 688-4101
Tennessee	(615) 741-7036
Texas	(512) 440-3834
Utah	(801) 530-6868
Vermont	(802) 828-2765
Virginia	(804) 786-6359
Virgin Islands	(809) 772-1315
Washington	(206) 956-5638
West Virginia	(304) 558-7890
Wisconsin	(608) 266-8579(H) (414) 521-5063(S)
Wyoming	(307) 777-7700

(H)-Health  
(S)-Safety

## OSHA Area Offices

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Area	Telephone
Albany, NY	(518) 464-6742
Albuquerque, NM	(505) 248-5302
Allentown, PA	(215) 776-0592
Anchorage, AK	(907) 271-5152
Appleton, WI	(414) 734-4521
Austin, TX	(512) 916-5783

Avenel, NJ	(908) 750-3270
Baltimore, MD	(410) 962-2840
Bangor, ME	(207) 941-8177
Baton Rouge, LA	(504) 389-0474
Bayside, NY	(718) 279-9060
Bellevue, WA	(206) 553-7520
Billings, MT	(406) 247-7494
Birmingham, AL	(205) 731-1534
Bismark, ND	(701) 250-4521
Boise, ID	(208) 334-1867
Bowmansville, NY	(716) 684-3891
Braintree, MA	(617) 565-6924
Bridgeport, CT	(203) 579-5581
Calumet City, IL	(708) 891-3800
Carson City, NV	(702) 885-6963
Charleston, WV	(304) 347-5937
Cincinnati, OH	(513) 841-4132
Cleveland, OH	(216) 522-3818
Columbia, SC	(803) 765-5904
Columbus, OH	(614) 469-5582
Concord, NH	(603) 225-1629
Corpus Christi, TX	(512) 888-3420
Dallas, TX	(214) 320-2400
Denver, CO	(303) 844-5285
Des Plaines, IL	(847) 803-4800
Des Moines, IA	(515) 284-4794
Englewood, CO	(303) 843-4500
Erie, PA	(814) 833-5758
Fort Lauderdale, FL	(954) 424-0242
Fort Worth, TX	(817) 581-7303
Frankfort, KY	(502) 227-7024
Harrisburg, PA	(717) 782-3902
Hartford, CT	(860) 240-3152
Hasbrouck Heights, NJ	(201) 288-1700
Guaynabo, PR	(787) 277-1560
Honolulu, HI	(808) 541-2685
Houston, TX	(281) 286-0583
Houston, TX	(281) 591-2438

Indianapolis, IN	(317) 226-7290
Jackson, MS	(601) 965-4606
Jacksonville, FL	(904) 232-2895
Kansas City, MO	(816) 483-9531
Lansing, MI	(517) 377-1892
Little Rock, AR	(501) 324-6291
Lubbock, TX	(806) 743-7681
Madison, WI	(608) 264-5388
Marlton, NJ	(609) 757-5181
Methuen, MA	(617) 565-8110
Milwaukee, WI	(414) 297-3315
Minneapolis, MN	(334) 664-5460
Mobile, AL	(205) 441-6131
Nashville, TN	(615) 781-5423
New York, NY	(212) 466-2482
Norfolk, VA	(804) 441-3820
North Aurora, IL	(630) 896-8700
Oklahoma City, OK	(405) 231-5351
Omaha, NE	(402) 221-3182
Parsippany, NJ	(201) 263-1003
Peoria, IL	(309) 671-7033
Philadelphia, PA	(215) 597-4955
Phoenix, AZ	(602) 640-2007
Pittsburgh, PA	(412) 644-2903
Portland, OR	(503) 326-2251
Salt Lake City, UT	(801) 524-5080
San Francisco, CA	(415) 744-7120
Savannah, GA	(912) 652-4393
Smyrna, GA	(404) 984-8700
Springfield, MA	(413) 785-0123
St. Louis, MO	(314) 425-4249
North Syracuse, NY	(315) 451-0808
Tampa, FL	(813) 626-1177
Tarrytown, NY	(914) 524-7510
Toledo, OH	(419) 259-7542
Tucker, GA	(404) 493-6644
Westbury, NY	(516) 334-3344
Wichita, KS	(316) 269-6644

Wilkes Barre, PA  
Wilmington, DE

(717) 826-6538  
(302) 573-6115

## Regional Offices

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**Region I**  
**(CT, \* MA, ME, NH, RI, VT\*)**  
JFK Federal Building  
Room E-340  
Boston, MA 02203  
Telephone: (617) 565-9860

**Region II**  
**(NJ, NY, \* PR, VI\*)**  
201 Varick Street  
Room 670  
New York, NY 10014  
Telephone: (212) 337-2378

**Region III**  
**(DC, DE, MD, \* PA, VA, \* WV)**  
Gateway Building, Suite 2100  
3535 Market Street  
Philadelphia, PA 19104  
Telephone: (215) 596-1201

**Region IV**  
**(AL, FL, GA, KY, \* MS, NC, SC, \* TN\*)**  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Room 6T50  
Atlanta, GA 30303  
Telephone: (404) 562-2300

**Region V**  
**(IL, IN, \* MI, \* MN, \* OH, WI)**  
230 South Dearborn Street  
Room 3244  
Chicago, IL 60604  
Telephone: (312) 353-2220

**Region VI**

**(AR, LA, NM,\* OK, TX)**

525 Griffin Street

Room 602

Dallas, TX 75202

Telephone: (214) 767-4731

**Region VII**

**(IA,\* KS, MO, NE)**

City Center Square

1100 Main Street, Suite 800

Kansas City, MO 64105

Telephone: (816) 426-5861

**Region VIII**

**(CO, MT, ND, SD, UT,\* WY)**

1999 Broadway, Suite 1690

Denver, CO 80202-5716

Telephone: (303) 844-1600

**Region IX**

**(American Samoa, AZ,\* CA,\* Guam, HI,\* NV,\***

**Trust Territories of the Pacific)**

71 Stevenson Street

Room 420

San Francisco, CA 94015

Telephone: (415) 975-4310

**Region X**

**(AK,\* ID, OR,\* WA\*)**

1111 Third Avenue

Suite 715

Seattle, WA 978101-3212

Telephone: (206) 442-5930

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**Footnote (1)** The American Society for Testing Materials also has available OSHA-approved standards for rubber protective equipment. [\(Back to Text\)](#)

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**Footnote** \* States with Occupational Safety and Health programs. [\(Back to Text\)](#)